ADMINISTRATIVELY CONFIDENTIAL

February 27, 2003

MEMORANDUM

To: Jaya Zyman-Ponebshek, URS
Rini Ghosh, SEA

Cc: David Coburn , Sara Beth Watson

From: Darrell Brownlow

Subject: Finance Docket No. 34284, Southwest Gulf Railroad Medina County Project Data Needs for Environmental Assessment

I. Purpose and Need for the Project

The purpose of the proposed action is to more efficiently transport limestone aggregate from the proposed quarry in Medina County to the main Union Pacific line in order to reach more distant markets in the Houston, Southeast, and Gulf Coast and Valley region of Texas.

1. **Current demand to be met by the proposed rail line**
   Currently, the estimated demand for road and building construction aggregate in the Houston and Southeast region of Texas exceeds 45 million tons per year. Of this amount, more than 50% is transported into that region by rail. These areas, like most of the Gulf Coast of Texas, do not have naturally occurring and locally available construction aggregates. Due to the absence of rail connected quarries in Medina County, none of this aggregate comes from Medina County. Vulcan anticipates that its proposed rail-connected Medina County Quarry will supply more than 5 million tons per year to the Houston and Southeast region of Texas.

2. **Future demand that could be met with construction of quarry and use of rail**
   The increase in demand for aggregate products produced and shipped by rail from the Central Texas area, including Medina County, to the targeted remote markets could likely be 3 to 5 million tons per year. This increased demand will result not only from a growing population but also from the depletion of locally produced sand and gravel and limestone reserves.

3. **Difference in transportation costs (per ton-mile) between rail and via truck**
   The cost of trucking limestone aggregate from Vulcan's Medina County Quarry to markets in Houston and Southeast Texas is estimated to be at least $ 0.10 per ton per mile, versus $ 0.04 per ton per mile for shipment by rail. Truck transportation of aggregate products becomes increasingly inefficient and uneconomical for distances much over 50 miles. Ninety percent of the quarry's prospective customers are located in excess of 50 miles from the quarry.

4. **Estimate of the volume of truck traffic displaced by rail**
   Transporting the quarry's proposed volume of aggregate by over-the-road trucks from the quarry site to the Union Pacific rail line would require the construction of a remote rail yard facility adjacent to the Union Pacific tracks. Transferring 5,000,000 tons per year from the quarry to the remote rail yard would involve in excess of 215,000 round trips per year (over 850 per day).

II. Construction

1. Electronic Maps of Alignment and Location Maps

These will be forwarded under separate cover.

2. Schedule of Construction and Operation

A. Clearing and Preparation of ROW:	Begin in Month 1
B. Construction of Roadbed:	Begin in Month 3
C. Placement of Tracks:	Begin in Month 5
D. Begin Operation:	Begin in Month 12

3. Construction Phases

A. Clearing and Preparation of Right of Way
B. Fencing and Utility Relocations
C. Earth Work – Cut and Fill:
D. Roadbed Construction
E. Structures/Bridges Construction
F. Track Placement
G. Signaling and Grade Crossings
H. Seeding and Erosion Control

Details of each of these elements are provided in the accompanying TRAX Conceptual Design Report.

Responses to items 4-11 may be found in accompanying TRAX Conceptual Design Report

III. Operation and Maintenance

1. **Describe the types of locomotives to be used.**
   Gross train weights exceeding 14,000 tons can be expected from a 100, 100-ton car, capacity train. A minimum of 9000 horsepower will be required to move these heavy trains to the main Union Pacific track. Once on the UP main track, since their grades and speeds exceed those planned for the line, additional locomotives will be added.

2. **Describe the number and type of cars to be used, average number of cars per train.**
   The typical car will be a gondola or bottom-dump hopper type with a capacity to carry 100 to 120 tons of aggregate. The typical train length will be 100 of these cars.

3. **Describe switching operations and interface with UP.**
   Southwest Gulf Railroad or Union Pacific will own, lease, and or operate the engine and cars on the track. SWG anticipates entering into an arrangement with UP regarding the interface with the UP, the details of which will be determined at a later date.

4. **Describe the length of typical train in terms of number of cars and length.**
   The average car ranges from 50 to 58 feet in length, therefore, including variable numbers of engines, the average train length will range from 5,200 to 5,800 feet.

5. **Describe the number of Train movements per week (where a movement is either loaded or unloaded).**
   An annual volume of 5,000,000 tons would require four train movements per day (2 leaving loaded, 2 returning empty), assuming a 250-Day work year.

6. **How many workers will be employed by and what is the estimated payroll for the operation of the train.**
   Operation of the railroad would require approximately 24 people, with a combined compensation and benefits package estimated to be $ 1.15 million dollars.

7. **Describe maintenance procedures including weed control.**
   Maintenance procedures would be consistent with Union Pacific standards.

8. **Describe any public or private road crossings, and type of safety or warning devices proposed.**

Crossing	Road Type	Safety/Warning Device
County Road 454	(un-improved)	At grade - Warning Signs
County Road 4516	paved	At grade - Warning Signals
County Road 365	(gravel surface)	At grade - Warning Signs
FM 2676	paved – State Maint.	As Dictated by State DOT
County Road 353	(gravel surface)	At grade – Warning Signs
County Road 353	(gravel surface)	At grade – Warning Signs

9. **What are the average and maximum speeds expected**
   Track geometry will allow 40-mph maximum speed operations; however, 25 mph will meet the needs of the quarry for the foreseeable future and operating

at this speed will lower track maintenance costs. Speeds while climbing the steepest grades will be as low as 12 mph.

10. **Describe the buffer zone between the nearest mining and the rail line**
The rail line will terminate in the plant site which will be approximately 1,000 feet from the beginning point of the quarry. The length of the rail line, away from the quarry site and extending to the Union Pacific line will be bounded on both sides of the right-of-way by appropriate fencing. Inside the right-of-way, native grass and shrubs will be maintained. Consistent with most fence lines in the rural area, it is likely that native trees will develop and flourish, creating a visual buffer between the rail line and adjacent properties.

11. **What other shippers might use the rail in the future**
The area where the rail line will be located is currently rural in nature with the land being principally used for grazing small numbers of cattle and some limited farming. For many reasons, the presence of a short line railroad would make the area substantially more conducive to economic development. These reasons include the following: proximity (less than 20 minutes) to San Antonio and its expanding industrial base including a new Toyota Manufacturing Plant (less than 30 minutes from the site); relatively inexpensive land values; access to a major US Highway (US 90), relative proximity to Mexico; availability of low-cost construction aggregate; ample, competitively priced electricity, favorable geology and topography for building; and a close and available labor force. As a result, the area along the rail line would be desirable for a variety of manufacturing and distribution facilities, as well as industrial and agricultural facilities.

IV. Alternatives

1. Alternative Routes

The preferred route of the proposed rail line, although not necessarily the shortest possible route between the existing Union Pacific line and the proposed quarry avoids potentially sensitive areas such as wetlands. It is a relatively flat route which minimizes construction cost, and the preferred route limits the total number of individual property owners to as few as possible (10 individual properties, not counting property that is owned by Vulcan Materials Company).

A total of 8 routes (with minor variations within the routes) between the Union Pacific's mainline and the proposed quarry location were evaluated using SWG's screening criteria. The screening criteria included avoidance of wetlands, favorable topography and limiting the number of properties crossed. Ultimately, four alternative routes met the screening criteria and were considered. In addition to the preferred route, described above, the other three alternatives considered were:

- Alternative Route 1 (F) would connect with the Union Pacific line approximately 3 miles west of where the preferred route would . This route is approximately 2 miles longer than the preferred route and crosses in excess of 20 individual properties.

- Alternative Route 2 (G) connects with the Union Pacific line in the same location as the preferred route, however it swings farther west than the preferred line, increasing the distance by approximately 1,000 feet over the preferred route and increasing the number of individual property owners to more than 18.

- Alternative Route 3 (D-2), like Route 2 and the preferred route, connects with the Union Pacific line in the same location, however, its alignment swings father east and then cuts back to the west diagonally across several properties. This route is nearly 2,500 feet longer than the preferred route and increases the individual properties to be crossed to more than 16.

Alternative means of transporting quarried materials to the Union Pacific line via a conveyor system were also considered. In addition to the substantial costs of building and maintaining the 7+ miles of conveyor equipment, such a conveyor would still require the construction of a remote rail yard and likely a second aggregate finishing plant near the Union Pacific line. There is a subdivision south of the intersection with the UP line and the second finishing plant would be nearer a larger concentration of people than the finishing plant at the quarry, which would be the only finishing plant required under the rail transportation scenario. As a result, this alternative was rejected.

2. Describe the advantages of selected route.

The preferred route is not only the most economical route because of relatively flat topography and suitable geology, it also represents the fewest number of individual properties between the Union Pacific line and the quarry location. The route crosses a single lightly used State of Texas maintained Farm to Market road (FM 2676) in a location that affords high visibility in both directions. The route also takes maximum advantages of existing property lines and fence lines and reduces splitting large tracts of land.

3. No-build alternative

The no-build alternative would require the use of trucks to carry the aggregate from the quarry to the UP line. This would significantly reduce the economic efficiencies of distributing quarry products to markets in Southeast Texas, the opportunity of capitalizing on the rail distribution network, and the ability to attract capital investment for the development of Medina County. In addition,

considering the recent and projected growth in population of the Southeast Texas region along with its accompanying demands for infrastructure development, when combined with the limited and declining resources of existing aggregate operations, the no-build alternative has potentially far-reaching negative economic impacts on the region.

TRAX

Engineering &
Associates, Inc.

Boise, Idaho
November 11, 1999

RE:Vulcan Materials - Dunlay Project - Conceptual Design

TO: Mr. Bob Irwine
TO: Mr. Darrell Brownlow

FROM: Jerry Heavin

We have completed a conceptual plan and cost estimate for construction of a rail line between Union Pacific's main track west of Dunlay, Texas and the proposed quarry site north of the community of Quihe, Texas.

Character of Design Work

The accompanying drawings and estimate are the result of a conceptual-level engineering effort to locate a proposed railroad line and to estimate construction cost. The design criteria is based on American Railway Engineering and Maintenance of Way (AREMA) recommended practices for heavy-haul rail lines with allowances made for the specifics of your intended use of the facility. A conceptual-level effort implies that the design is not yet "optimized" from the standpoint of minimizing construction cost and maximizing return on investment. I am confident that as the process enters the preliminary design phase, costs and returns can be improved. As we discussed, Vulcan is in a better position to address permitting concerns than TRAX so we have given no consideration to environmental concerns at this early design stage. These and other related issues must be addressed as part of subsequent project development.

Routes Considered

A total of 15 routes were developed between Union Pacific Railroad Company's (UP) main line and the proposed loading facility near the quarry. The routes were designated as Alignment "A", "B"... "K-1", "K-2", etc. Many of the alignments are minor iterations of others and for the purposes of this report, drawings of the less significant variations have been excluded from the attached documents (but remain on file if needed). The 8 selected alignments, portrayed by the accompanying drawings, document the evolution of a conceptual design that meets your requirements for serviceability. The design incorporates sound railway engineering principles that will translate to cost effective maintenance and operating characteristics throughout the life of the quarry. Our recommended alignments "K-1" and "K-2" have evolved from our discussions and are practical to build and operate. Based on the industry standard Davis formula, Chart 1 gives approximate horsepower requirements based on 5-mph speed increments and the physical characteristics of the proposed lines. The final route will be approximately 7.2 miles long from UP main track to the south edge of the quarry property. Construction of the loading loop raises the total mileage to be built to 9.1 miles.

Base Operations

Gross train weights exceeding 14,000 tons can be expected from a 100 car consist of 100-ton capacity cars. From a practical standpoint, a minimum of 9000 horsepower will be required to move these heavy trains to the main track. Once on the UP main track, since their grades and speeds exceed those planned for the line, additional locomotives will be added. Except for the loop tracks, track geometry will allow 40-mph maximum speed operations; however, 25 mph will meet the needs of the quarry for the

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foreseeable future and operating at this speed will help keep track maintenance costs low. Speeds obtained while climbing the 1-percent ruling grade near station 80+00 could as low as 12 mph with 9000 horsepower. This will not introduce delays since speeds will be reduced as the loaded train prepares to enter the UP main causing no practical impact on running time. A loaded 14,000-ton train with a 0.64 horsepower per trailing ton ratio will be able to take advantage of 25-mph design speeds on the remainder of the line.

Loading Loop Track Layout

Conceptual design of the loading loop is based on established industry practices for unit-train operation. As illustrated by the drawings, a phased construction is recommended with the track layout expanding as needed to accommodate future increase in quarry output. Assuming interchange of trains with UP occurs smoothly and loading time for trains is less than 8 hours, the first phase of construction will allow for production of up to 1-100 car loaded train per day. With 10,000 net tons in each train and a 250 day work year, quarry output of 2.5 million rail tons could be supplied to the aggregate market with phase 1. The construction of the second phase will accommodate 4 loaded trains (10 million tons) and for more than 4 trains, the third phase must be considered.

Subsequent Engineering

The accuracy of this engineering effort is limited to that of the topographic information used. In general, the coordinates of the alignment (presented on the drawings for alignments "K-1" and "K-2") may be considered to be within approximately 100 feet of the desired location. However, subsequent modifications to the alignment, as a result of regulatory agency's concerns or further engineering efforts to optimize the alignment (minimize cost) could affect the location. It is recommended that State and Federal regulatory agencies become involved in the development of the project prior to further advancement of the rail line design. The requirements of these agencies, particularly in regard to any environmental issues raised, could have significant impacts on the location of the alignment. Satisfactorily addressing any such issues, through modification of the conceptual design, will facilitate efficient and timely execution of subsequent Preliminary and Final design efforts. Preliminary design should focus on optimizing the alignment (based on more detailed topographic information), while Final design will provide detailed drawings for all items required for construction of the project.

Data

Mapping

Raster images of USGS 7.5-min. topographic maps, as provided by SureMaps, were a fundamental basis for design of the route. This data has been geo-referenced to the Texas State Plane Coordinate System, south-central zone. Geologic data comes from the Geologic Atlas of Texas, San Antonio Sheet, 1982 published by The University of Texas at Austin.

Aerial Photography

As a supplement to the USGS topographic maps, raster images of aerial photographs were used to evaluate the physical features of the route in greater detail.

Digital Terrain Model

USGS 7.5-min. Digital Elevation Models covering the proposed route were used as the basis for earthwork calculations. This data has been geo-referenced to the Texas State Plane Coordinate System, south-central zone.

Hydrology

Data presented in the USGS publication "Magnitude and Frequency of Floods in the United States" (Part 8) was used as the basis for culvert and bridge sizing.

Design Criteria

Grades

Grades have been limited to 1.0%, consistent typical industry practice for new heavy-haul rail lines. This grade is also somewhat less than ruling grades on the U.P. between Dunlay and Houston (1.2-1.4%). Consequently, if run-through power is used between the loading facility and destination points, tonnage ratings will be governed by the grades on the U.P. rather than those of the proposed rail line. Vertical curves between grades have been designed in accordance with AREMA recommended practice. Grades are generally limited to 0.15% throughout trackage where trains will either be loading or standing without locomotives attached (the latter case applies to the potential interchange yard site near the connection with the U.P. mainline). This insures ease of operation while loading, and relative safety of leaving trains unattended for interchange. All grades comply with Union Pacific Standards for Industrial Trackage dated February 1997, publication PB22029.

Curves

Curves have been limited to 7° 30' at the loading loop, consistent with typical industry practice for new unit-train loading and unloading loops. Curves for the portion of the line used by loaded trains have been limited to 6° 30', again consistent with typical industry practice. These curvatures insure safety and limit rail wear and corresponding track maintenance to reasonable levels. Curves exceeding 4° 00' have been limited to the ends of the line only, where speeds will be relatively low. The majority of the central portion of the line is designed with curves of 3° 00' or less, permitting potential operating speeds of up to 40 mph. Allowance for incorporation of proper spirals (in subsequent design work) has been provided. Assuming a maximum curve super-elevation 4.5", the following table describes maximum track speeds.

Degree of Curve	Curve Radius	Maximum Speed (mph)
3° 00'	1909.9'	40
4° 00'	1432.4'	35
6° 30'	881.5'	25
7° 30'	764.0'	25

Turnouts

Trackwork geometry provides adequate space for #10 turnouts in all cases. Larger turnouts can be accommodated with minor changes to the proposed geometry. Discussions with Union Pacific may develop a sufficient return on investment from reduced train delay to warrant a 25-mph #14 remote control turnout at the main line connection.

Hydrology and Land Use

Sizing of bridges and culverts is based on a flood frequency of 25 years. Constraints on the location of the route, in regards to specific parcels of property, were the primary driver in most location decisions and were established by our many discussions.

Assumptions

Geology

Earthwork calculations and the cost estimate assume that all excavation will be in rippable material. This assumption is grounded in site visits, inspection of road cuts in the area and data from the University of Texas - Austin maps, but is not backed by soils tests and drillings. Based on this information, road-bed side slopes of 1:1 in cuts (with 10 ft. wide benches at 20 ft. height intervals) and 2:1 in fills were used. These side slope assumptions were used to determine of right-of-way width throughout the length of the line.

Roadbed

For the purposes of earthwork calculations and establishment of right-of-way width, a 26 ft. roadbed width (at top of sub-grade) was used throughout the length of the line, consistent with typical industry practice. This width does not provide for a maintenance-of-way access road along side the track. In cuts, ditches 10 ft. wide and 2 ft. deep (below top of subgrade) have been assumed on both sides of the track. Assumed side slopes were as noted in the preceding paragraph.

Right-of-way

Based on the catch lines (toe of fill or top of cut) established from the preceding roadbed assumptions, right-of-way lines were determined. These lines are a minimum of 10 ft. from catch lines. Minimum right-of-way width was assumed to be 100 ft.

Road Crossings

All highway railroad crossings have been assumed to be at grade. Solid heavy duty timber crossings conforming to UP's current standard were used in preparing the cost estimate. Modification of the alignment and profile may be required in order to accommodate grade separation structures.

Cost Estimate

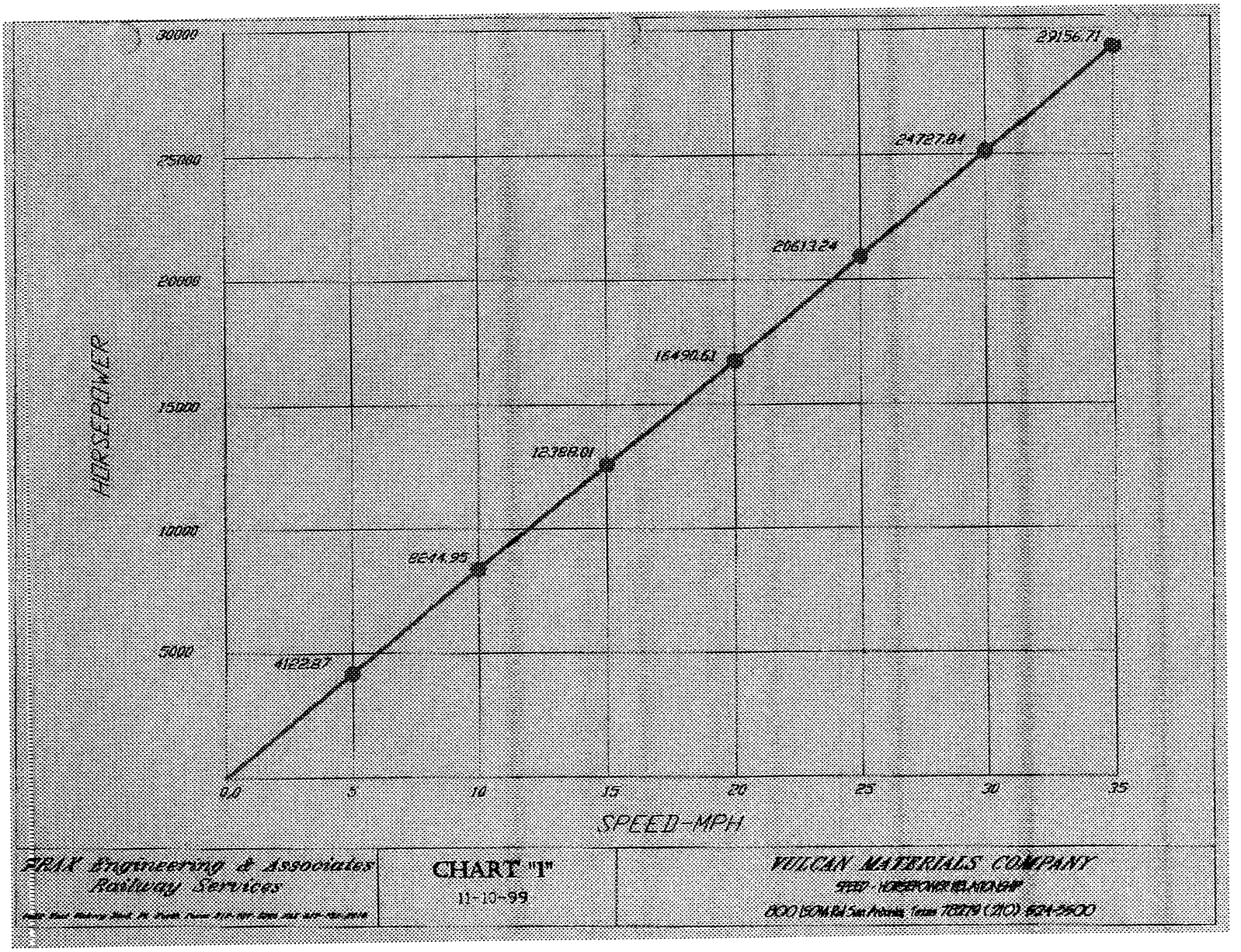
The cost estimate in Chart 2 summarizes the major categories of construction expense and Chart 3 document quantities and material types used in making the basic track estimate.

A recap of the primary estimate assumptions are listed below:

- Cuts are in material that can be excavated without blasting and will stand at a 1: 1 slope.
- Earthwork costs can be reduced if UP – Vulcan agreements allow for run-through power to be used on the rail line or that no interchange will occur at the UP main line connection. This will allow for increasing grades to a match UP's ruling grade between Dunlay and the aggregate outlet and eliminating the flat spot near the connection.
- Track construction will be 112# conventional rail using timber cross ties. In fact, continuous welded rail with concrete ties may provide a less costly alternative and will be investigated in the preliminary design phase. At time of construction different track materials such as rail and ties may be available. We may be able to take advantage of market price fluctuations and change parameters that benefit track strength and but do not adversely affect cost.
- Ballast will be available from Vulcan's quarry at Knippa, Texas
- Detailed soils analysis will not require lime stabilization.
- There are no environmental remedies included in cost estimate.
- County road work needed in connection with the project will not be included in the rail portion of the project cost.

- Drainage structures are expensive for a facility in an arid climate but are based on USGS data for a 25 year flood. A more detailed hydrology study may reduce this portion of the project estimate.
- Track construction standards conform to industry practice and will permit operation by UP over the track if their use of the line helps reduce operating costs.
- Right of Way costs are excluded.
- Utility relocations or protection may be revised after detailed surveys of property and route are completed. Encasement or protection of gas and oil pipelines are major considerations in the work.

Thanks for this opportunity to serve Vulcan and we look forward working with you as the project advances.



PRAX Engineering & Associates Railway Services	CHART "1" 11-10-99	VULCAN MATERIALS COMPANY TEST - HORSEPOWER @ MOVE

Proposed Rail Line - Dunlay, TX
Construction Cost Estimate

COST SUMMARY

Chart 2
12-Nov-99

Item No.	Description			Notes
100	Right-of-Way (100' width)		$0	Excludes Any Relocation of Structures
200	Earthwork		3,001,000	Assumes All Excavation Is Rock
300	Other Roadbed		300,000	
400	Track		3,443,000	Includes Main Track, Turnouts and Loading Loop
500	Structures		2,640,000	25 Year Flood Design Parameters
600	Fencing & Utility Relocations		347,000	Includes Protective Casings for 2 Pipeline Crossings
700	Road Relocations & Grade Crossings		50,000	
800	Signaling		250,000	Incl. crossing Signals and Changes to U.P. CTC System
	Total Direct Cost		**10,031,000**	
	Contingency on Total Cost	@ 10 %	1,000,000	
	Engineering & Surveying	@ 3 %	300,000	
	Construction Management	@ 2 %	200,000	
	Total Estimated Construction Cost		**$11,531,000**	

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TRACK ESTIMATE

112# Jointed Rail Option

Dunlay Branch

Item	Description	Unit	Quantity	Price	Total
Ballast					
Subballast	6" Select Material	Ton	33716	10.00	$337,155
Track	AREMA #5	Ton	32531	6.00	$195,184
Sub Total			$532,339		
Ties					
Cross Ties	7"x9"x 9'-0" 3250 per mile	Ea.	27170	35.00	$950,950
Sub Total			$950,950		
OTM					
Plates	8"x 12" SH @ 2 per tie	Ea.	54340	3.50	$190,190
Anchors	112# SH @ 16 per rail	Ea.	36227	0.55	$19,925
Spikes	5/8" X 6"	Kg	679	80.00	$54,340
Bolts	For 112 # Rail	Kg	188	165.00	$31,051
Washers	112 # Rail	Ea.	9880	0.25	$2,470
Joint Bars	112 # Rail	Pr	2470	30.00	$74,100
Sub Total			$372,076		
Rail	112# AREA	Ton	1798	420.00	$755,227
Sub Total			$755,227		
Labor					
Construct Track	Assemble on site	TF	48168	20.00	$963,300
Contingencies		%	10%	3573892	$357,389
$/Trk Ft W/O Grading				$74.62	

Chart 3

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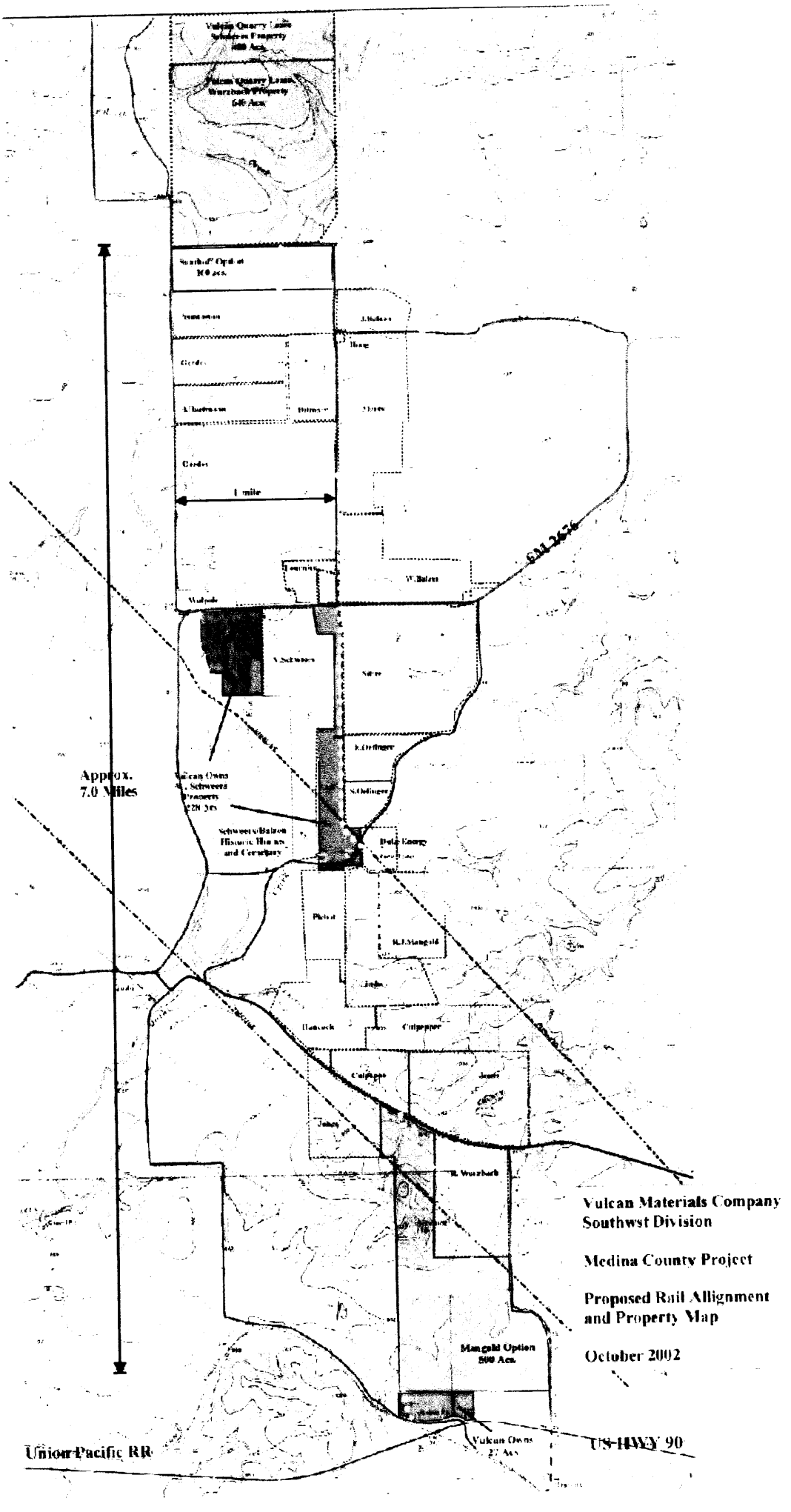
Approx.
7.0 Miles
1 mile
Mangold Option
500 Acs.
Union Pacific RR
US HWY 90
Vulcan Materials Company
Southwst Division
Medina County Project
Proposed Rail Allignment
and Property Map
October 2002